UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/088,644	03/20/2002	Claus Hillermeier	32860/000282/US	7432

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EXAMINER
GUILL, RUSSELL L

ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 07/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

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	Application No.	**Applicant(s)**
Office Action Summary	10/088,644	HILLERMEIER ET AL.
	Examiner	**Art Unit**	
	Russell L. Guill	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>20 March 2002</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1 - 43</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1 - 43</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>20 March 2002</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/20/2002</u>.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1 – 43 have been examined. Claims 1 – 43 have been rejected.

Claim Objections

2. Claims 8, 19, 29, and 40 are objected to because of the following informalities: The claims recite the phrase, "an neural network". The phrase should be "a neural network". Appropriate correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1 – 11 and 14 – 22 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The language of the claim raises a question as to whether the claim is directed merely to an abstract idea or algorithm that is not tied to a technological art, environment or machine which would result in a practical application producing a concrete, useful and tangible result. It appears that the method could be performed entirely with a pencil and paper.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 4, 9, 10, 12, 13, 25, 30, 31, 33, 36, 41, and 42 are rejected under 35 U.S.C.

102(b) as being anticipated by George (U.S. Patent 5,373,457).

6.1. Regarding claim 1: George appears to teach a method of simulation of a

technical system, in which a function depends on parameters and on setting

constants, comprising:

6.1.1. Determining a result in the form of an influence of the parameters on the

technical system, as a function of parameters and on the basis of a request to an

external source (*column 1, lines 1 – 46; and column 2, lines 15 – 31; and column 2,*

lines 49 – 69; and column 3, lines 1 – 13; and column 4, lines 61 – 68; and column

5, lines 37 - 44).

6.1.2. Temporarily storing the results (*column 1, lines 1 – 46; and column 2, lines 15 – 31; and column 2, lines 49 – 69; and column 3, lines 1 – 13; and column 4, lines 61 – 68; and column 5, lines 37 - 44*).

6.1.3. Simulating the technical system on the basis of the result and of the setting constants (*column 1, lines 1 – 46; and column 2, lines 15 – 31; and column 2, lines 49 – 69; and column 3, lines 1 – 13; and column 4, lines 61 – 68; and column 5, lines 37 - 44*).

    6.1.3.1. Regarding (*column 1, lines 1 – 46; and column 2, lines 15 – 31; and column 2, lines 49 – 69; and column 3, lines 1 – 13; and column 4, lines 61 – 68; and column 5, lines 37 - 44*); it would have been inherent that the technical system has setting constants (since every equation has a setting constant with the value of one).

6.2. Regarding claims 4, 25, and 36: George appears to teach redetermining the influence of the parameters on the technical system by accessing the temporarily stored result (*column 4, lines 61 – 68*).

6.3. Regarding claims 9, 30, and 41: George appears to teach that the external source is at least one of a simulator and an experiment (*column 1, lines 25 – 30*).

6.4.   Regarding claims 10, 31, and 42: George appears to teach that the simulation

is carried out using a plurality of results, without the external source (*column 4,*

lines 61 – 68).

6.5.   Regarding claim 12: George appears to teach an arrangement for simulation

of a technical system, comprising:

6.5.1.   A processor unit wherein, a function depends on parameters and setting

constant, wherein the processor unit is adapted to determine a result in the form

of an influence of the parameters on the technical system as a function of a set of

parameters and on the basis of a request to an external source (*column 1, lines 1 –*

46; and column 2, lines 15 – 31; and column 2, lines 49 – 69; and column 3, lines 1

– 13; and column 4, lines 61 – 68; and column 5, lines 37 - 44).

6.5.2.   A memory adapted to temporarily store the result, wherein (*column 1,*

lines 1 – 46; and column 2, lines 15 – 31; and column 2, lines 49 – 69; and column

3, lines 1 – 13; and column 4, lines 61 – 68; and column 5, lines 37 - 44).

6.5.3.   The processor is adapted to simulate the technical system on the basis of

the result and of the setting constants (*column 1, lines 1 – 46; and column 2, lines*

15 – 31; and column 2, lines 49 – 69; and column 3, lines 1 – 13; and column 4,

lines 61 – 68; and column 5, lines 37 - 44).

6.5.3.1.   Regarding (*column 1, lines 1 – 46; and column 2, lines 15 – 31; and*

column 2, lines 49 – 69; and column 3, lines 1 – 13; and column 4, lines 61 – 68;

and column 5, lines 37 - 44); it would have been inherent that the technical

system has setting constants (since every equation has a setting constant with

the value of one).

6.6.   Regarding claim 13: George appears to teach a computer program product,

adapted to cause a processor unit to simulate a technical system, wherein a function

depends on parameters and setting constants, comprising:

6.6.1.   A first program segment, adapted to cause the processor unit to determine

a result, in the form of an influence of the parameters on the technical system, as

a function of a set of parameters and on the basis of a request to an external

source (*column 1, lines 1 – 46; and column 2, lines 15 – 31; and column 2, lines 49*

– 69; and column 3, lines 1 – 13; and column 4, lines 61 – 68; and column 5, lines

37 - 44).

6.6.2.   A second program segment, adapted to cause the processor unit to cause

the result to be temporarily stored (*column 1, lines 1 – 46; and column 2, lines 15*

– 31; and column 2, lines 49 – 69; and column 3, lines 1 – 13; and column 4, lines

61 – 68; and column 5, lines 37 - 44).

6.6.3.   A third program segment, adapted to cause the processor unit to simulate

the technical system on the basis of the result and of the setting constants

(*column 1, lines 1 – 46; and column 2, lines 15 – 31; and column 2, lines 49 – 69;*

and column 3, lines 1 – 13; and column 4, lines 61 – 68; and column 5, lines 37 –

44).

> **6.6.3.1.**   Regarding (*column 1, lines 1 – 46; and column 2, lines 15 – 31; and*
>
> *column 2, lines 49 – 69; and column 3, lines 1 – 13; and column 4, lines 61 – 68;*
>
> *and column 5, lines 37 - 44*); it would have been inherent that the technical
>
> system has setting constants (since every equation has a setting constant with
>
> the value of one).

6.7.   Regarding claim 33: George appears to teach a computer readable medium

(*column 2, lines 16 – 20 [Recording the observations in a computer memory]*).

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as
> set forth in section 102 of this title, if the differences between the subject matter sought to be
> patented and the prior art are such that the subject matter as a whole would have been
> obvious at the time the invention was made to a person having ordinary skill in the art to
> which said subject matter pertains. Patentability shall not be negatived by the manner in
> which the invention was made.

8.   Claims 2, 5, 6, 14, 16, 17, 20, 21, 23, 26, 27, 34, 37, and 38 are rejected under 35 U.S.C.

103(a) as being unpatentable over George (U.S. Patent 5,373,457) in view of Salimi

(U.S. Patent 5,883,818).

8.1.   Regarding claims 2, 23, and 34:

8.1.1. George does not specifically teach designing the technical system on the basis of the simulation.

8.1.2. Salimi appears to teach designing the technical system on the basis of the simulation (*column 2, lines 4 - 27, especially lines 23 - 27*).

8.1.3. The motivation to use the art of Salimi with the art of George would have been the advantage recited in Salimi of more accurate timing analysis (*column 2, lines 33 - 37*).

8.2.   Regarding claims 5, 26, and 37:

8.2.1. George does not specifically teach that the influence of each of a plurality of sets of parameters on the technical system is determined by checking the external source, and wherein the result of this check is temporarily stored.

8.2.2. Salimi appears to teach that the influence of each of a plurality of sets of parameters on the technical system is determined by checking the external source, and wherein the result of this check is temporarily stored (*figure 3; and figure 4; and column 2, lines 4 - 27*).

8.2.3. The motivation to use the art of Salimi with the art of George would have been the advantage recited in Salimi of more accurate timing analysis (*column 2, lines 33 - 37*).

8.3.   Regarding claims 6, 27, and 38:

8.3.1. George appears to teach that an additional influence is determined on the basis of the temporarily stored results (*column 4, lines 60 – 68*).

8.4.   Regarding claim 14:

8.4.1. George appears to teach redetermining the influence of the parameters on the technical system by accessing the temporarily stored result (*column 4, lines 61 – 68*).

8.5.   Regarding claim 16:

8.5.1. George does not specifically teach that the influence of each of a plurality of sets of parameters on the technical system is determined by checking the external source, and wherein the result of this check is temporarily stored.

8.5.2. Salimi appears to teach that the influence of each of a plurality of sets of parameters on the technical system is determined by checking the external source, and wherein the result of this check is temporarily stored (*figure 3; and figure 4; and column 2, lines 4 – 27*).

8.6.   Regarding claim 17:

8.6.1. George appears to teach that an additional influence is determined on the basis of the temporarily stored results (*column 4, lines 60 – 68*).

8.7.   Regarding claim 20:

8.7.1. George appears to teach that the external source is at least one of a

simulator and an experiment (*column 1, lines 25 – 30*).

8.8.   Regarding claim 21:

8.8.1. George appears to teach that the simulation is carried out using a plurality

of results, without the external source (*column 4, lines 61 – 68*).

9. Claims 3, 15 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over

George (U.S. Patent 5,373,457) and Salimi (U.S. Patent 5,883,818), in view of

Sommerville (Sommerville, Ian; "Software Enginering", 1989, Third Edition,

Addison-Wesley).

9.1.   Regarding claims 3 and 24:

9.1.1. George does not specifically teach that the design process includes at least

one of an adaptation of, a change to, and a redesign of the technical system.

9.1.2. Sommerville appears to teach that the design process includes an

adaptation of, a change to, and a redesign of the technical system (*page 534,*

paragraphs1, 5 – 7; and page 543, section 27.4).

9.1.3. The motivation to use the art of Sommerville with the art of George would

have been the benefit of using the process of restructuring to improve system

performance (*page 543, last sentence, continued on page 544*).

9.2. Regarding claim 15:

9.2.1. George appears to teach redetermining the influence of the parameters on

the technical system by accessing the temporarily stored result (*column 4, lines*

61 – 68).

10. Claims 7, 18, 28 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable

over George (U.S. Patent 5,373,457) and Salimi (U.S. Patent 5,883,818), in view of

common knowledge in the art.

10.1. Regarding claims 7, 18, 28 and 39:

10.2. George appears to teach that an additional influence is determined by

interpolation (*column 4, lines 60 – 68*).

10.3. George does not specifically teach that an additional influence is determined

by at least one of interpolation and *extrapolation*.

10.4. Official Notice is taken that it was common knowledge in the art at the time

of invention to use extrapolation to determine additional results extending beyond a

set of data points. The motivation would have been to allow simulation to be

performed when parameters occur outside of the set of data points originally used during building the model.

11. Claims 8, 19, 29 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over George (U.S. Patent 5,373,457) and Salimi (U.S. Patent 5,883,818), in view of Poggio (Poggio, Tomaso; Girosi, Federico; "Networks for Approximation and Learning", September 1990, Proceedings of the IEEE, Vol. 78, No. 9).

11.1.　Regarding claims 8, 19, 29 and 40:

11.2.　George does not specifically teach that an additional influence is determined from the results using an neural network.

11.3.　Poggio appears to teach determining an influence from stored results using an neural network (*page 1481, Abstract, and column 1, and column 2*).

11.4.　The motivation to use the art of Poggio with the art of George would have been the statement in Poggio that networks are useful for approximation (*page 1493, section D. Summary, second paragraph*).

12. Claims 11, 32 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over George (U.S. Patent 5,373,457) in view of Microsim (Microsim; "Microsim Pspice A/D & Basics+", 1997, Microsim Corporation).

12.1. George does not specifically teach determining, from the simulation of the technical system, the sensitivity of sets of parameters to changes in the setting constants.

12.2. Microsim appears to teach determining, from the simulation of the technical system, the sensitivity of sets of parameters to changes in the setting constants (_**page xiii, Chapter 13 Monte Carlo and Sensitivity/Worst-Case Analyses; and page 13-33, section Sensitivity Analysis**_).

    12.2.1. Regarding (_**page xiii, Chapter 13 Monte Carlo and Sensitivity/Worst-Case Analyses; and page 13-33, section Sensitivity Analysis**_); it would have been obvious to determining, from the simulation of the technical system, the sensitivity of sets of parameters to changes in the setting constants.

12.3. The motivation to use the art of Microsim with the art of George would have been the benefit in Microsim that sensitivity analysis allows statistical analysis of varying tolerances on the technical system (_**page 13-2**_).

13. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over George (U.S. Patent 5,373,457) and Salimi (U.S. Patent 5,883,818), in view of Microsim (Microsim; "Microsim Pspice A/D & Basics+", 1997, Microsim Corporation).

13.1.   George does not specifically teach determining, from the simulation of the

technical system, the sensitivity of sets of parameters to changes in the setting

constants.

13.2.   Microsim appears to teach determining, from the simulation of the technical

system, the sensitivity of sets of parameters to changes in the setting constants (*page*

xiii, Chapter 13 Monte Carlo and Sensitivity/Worst-Case Analyses; and page 13-33,

section Sensitivity Analysis).

> **13.2.1.** Regarding (*page xiii, Chapter 13 Monte Carlo and Sensitivity/Worst-Case*
>
> *Analyses; and page 13-33, section Sensitivity Analysis*); it would have been
>
> obvious to determining, from the simulation of the technical system, the
>
> sensitivity of sets of parameters to changes in the setting constants.

13.3.   The motivation to use the art of Microsim with the art of George would have

been the benefit in Microsim that sensitivity analysis allows statistical analysis of

varying tolerances on the technical system (*page 13-2*).

14. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over George (U.S.

Patent 5,373,457), in view of Sommerville (Sommerville, Ian; "Software Enginering",

1989, Third Edition, Addison-Wesley).

14.1.   Regarding claim 35:

14.1.1. George does not specifically teach that the design process includes at least one of an adaptation of, a change to, and a redesign of the technical system.

14.1.2. Sommerville appears to teach that the design process includes an adaptation of, a change to, and a redesign of the technical system (*page 534, paragraphs1, 5 – 7; and page 543, section 27.4*).

14.1.3. The motivation to use the art of Sommerville with the art of George would have been the benefit of using the process of restructuring to improve system performance (*page 543, last sentence, continued on page 544*).

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russ Guill whose telephone number is 571-272-7955. The examiner can normally be reached on Monday – Friday 9:00 AM – 5:30 PM.

16. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on 571-272-3749. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Any inquiry of a general nature or relating to the status of this application should be directed to the TC2100 Group Receptionist: 571-272-2100.

17. Information regarding the status of an application may be obtained from the Patent
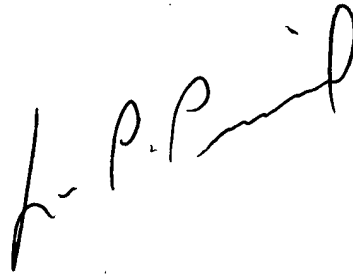
Application Information Retrieval (PAIR) system. Status information for published

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RG

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